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## (54) Race game

(57) Race game apparatus comprises an endless belt on which is mounted a figurine or other item (3, 4), a motor to drive the endless belt, a trackway (5) on which the figurine appears to run, a switch (2a, 2b) which disconnects power between the belt drive and the motor, and an air pump (14) adapted to be attached to the player, which pump will operate a further clutch mechanism to apply power to the belt drive while the switch (2a, 2b) is in the "off" position. The arrangement allows one player to play against a second figureine, or by the use of two pumps allows two players to compete against each other.

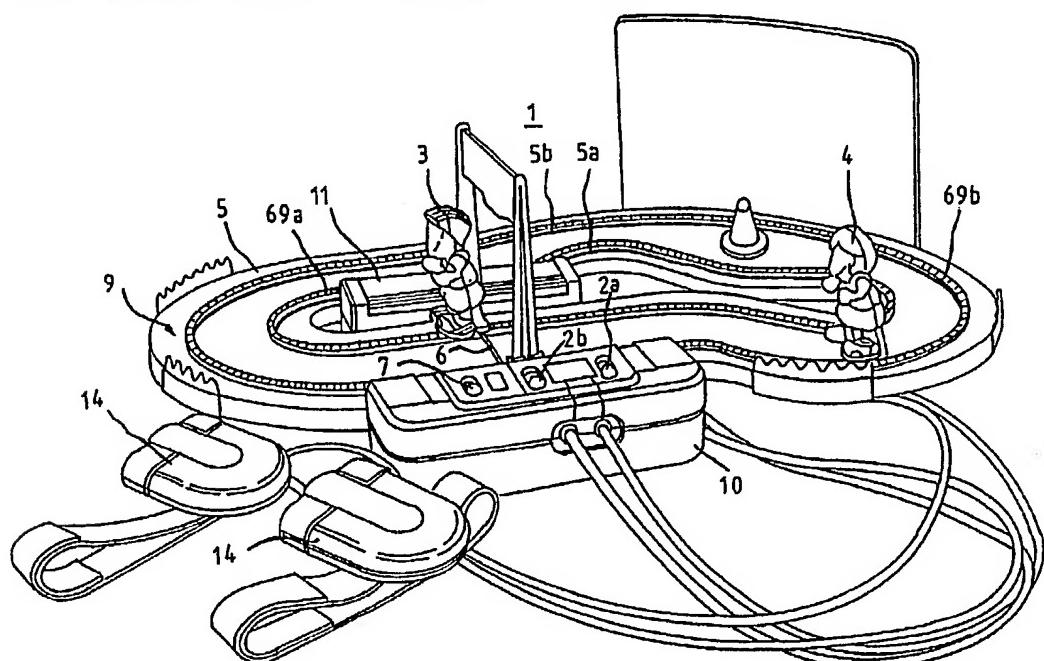


FIG. 1

37 + 6 94

1 / 6

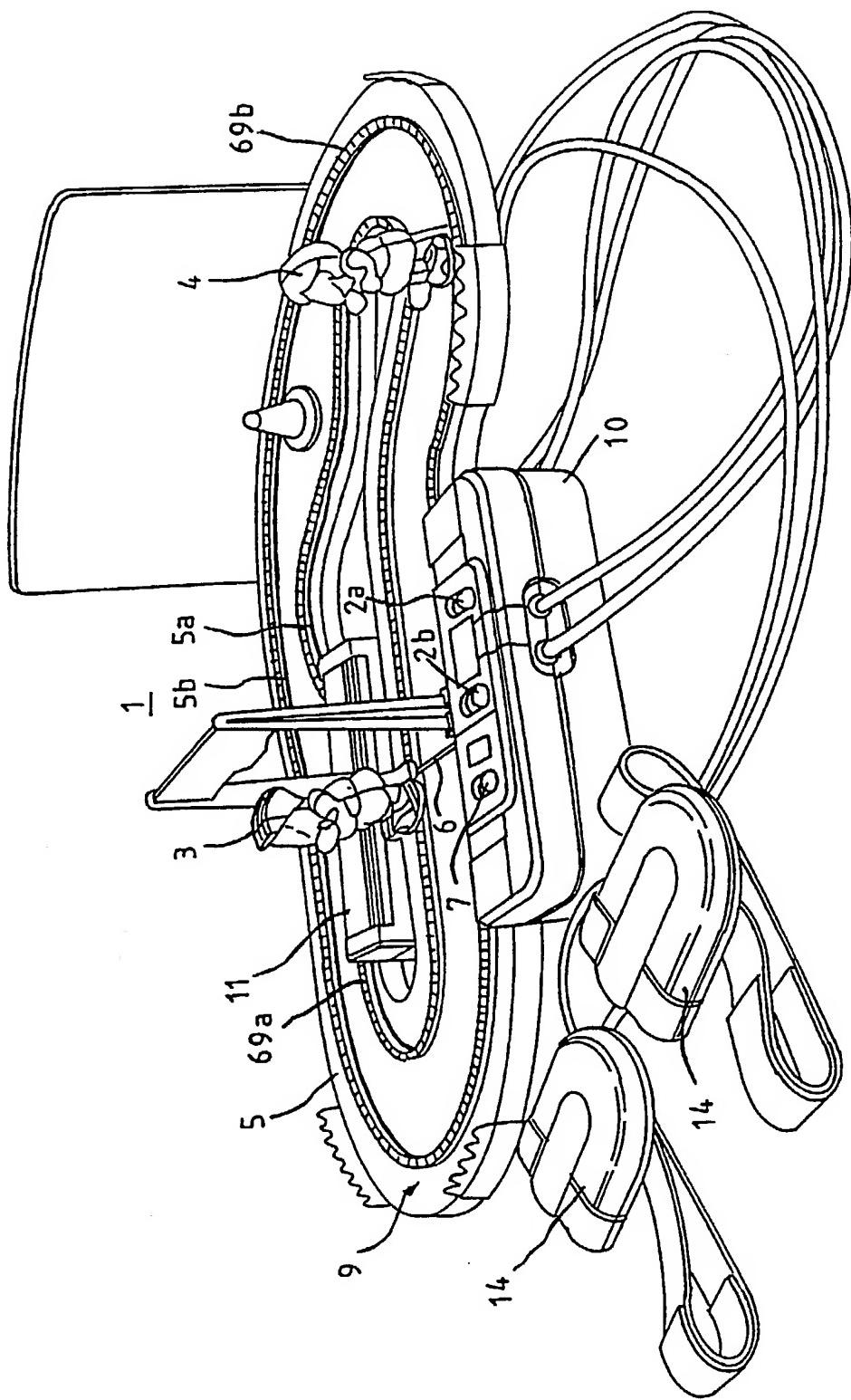


FIG. 1

27 + 6 94

216

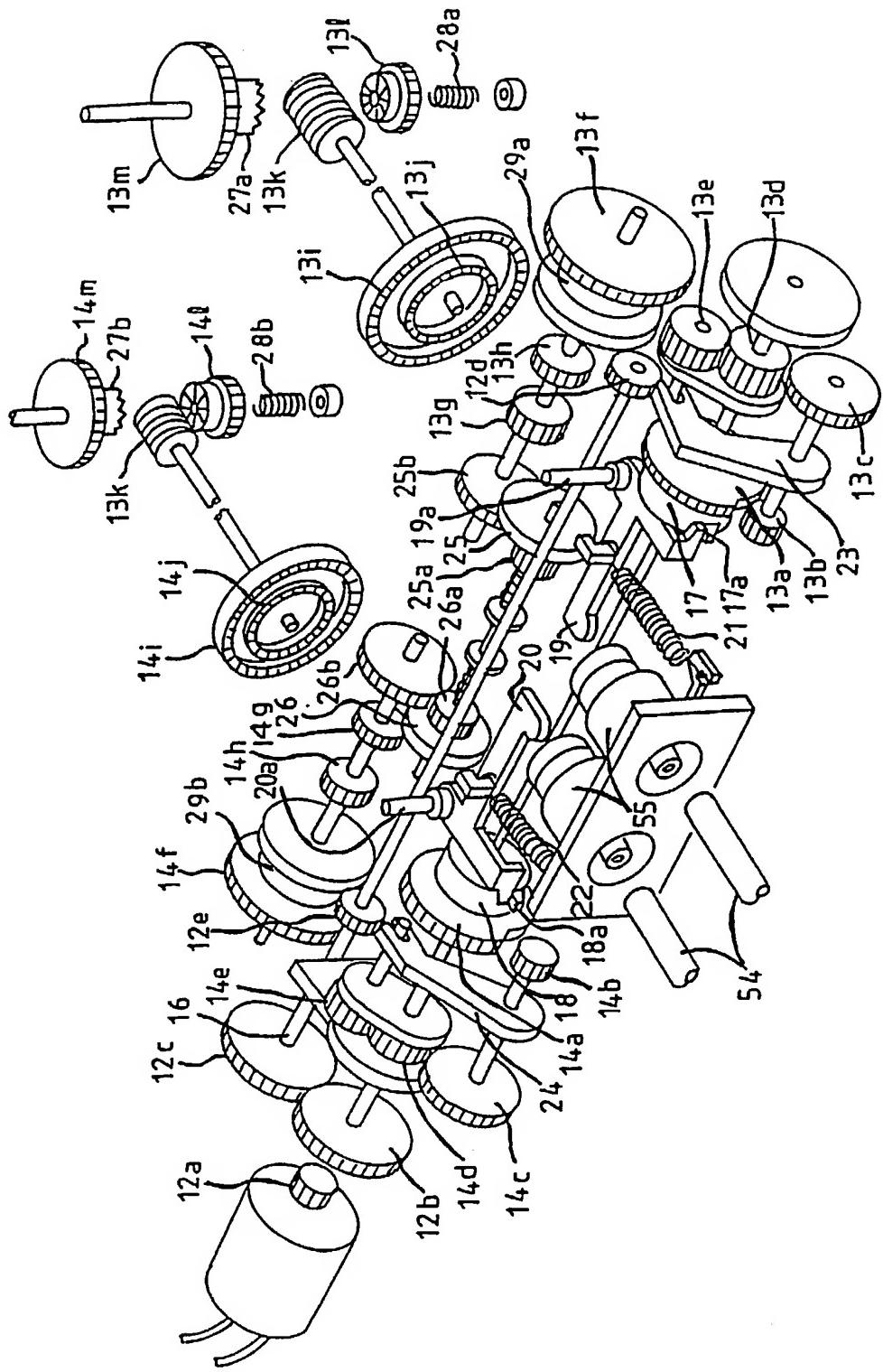


FIG. 2

27 + 6.94

3 / 6

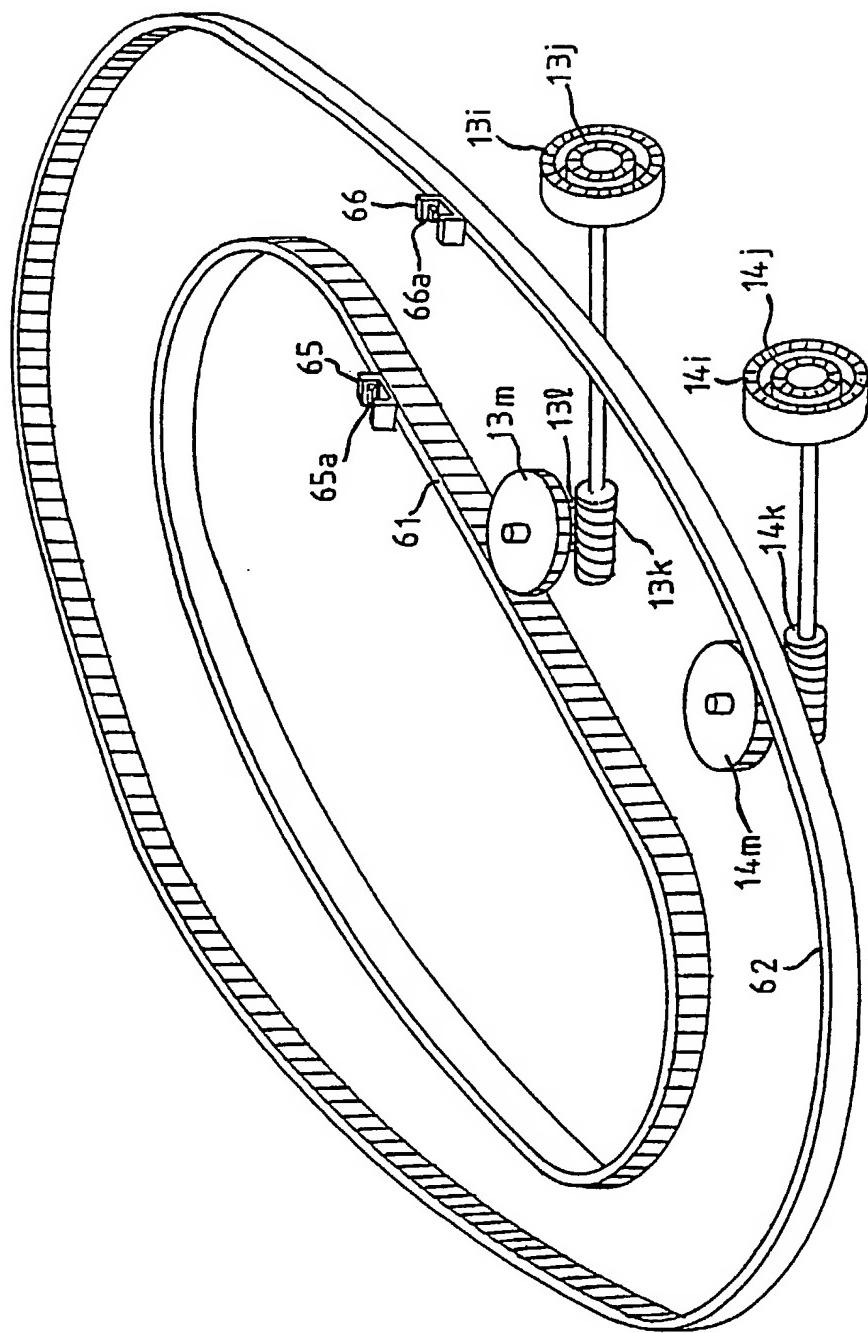


FIG. 3

37 +6 94

4 / 6

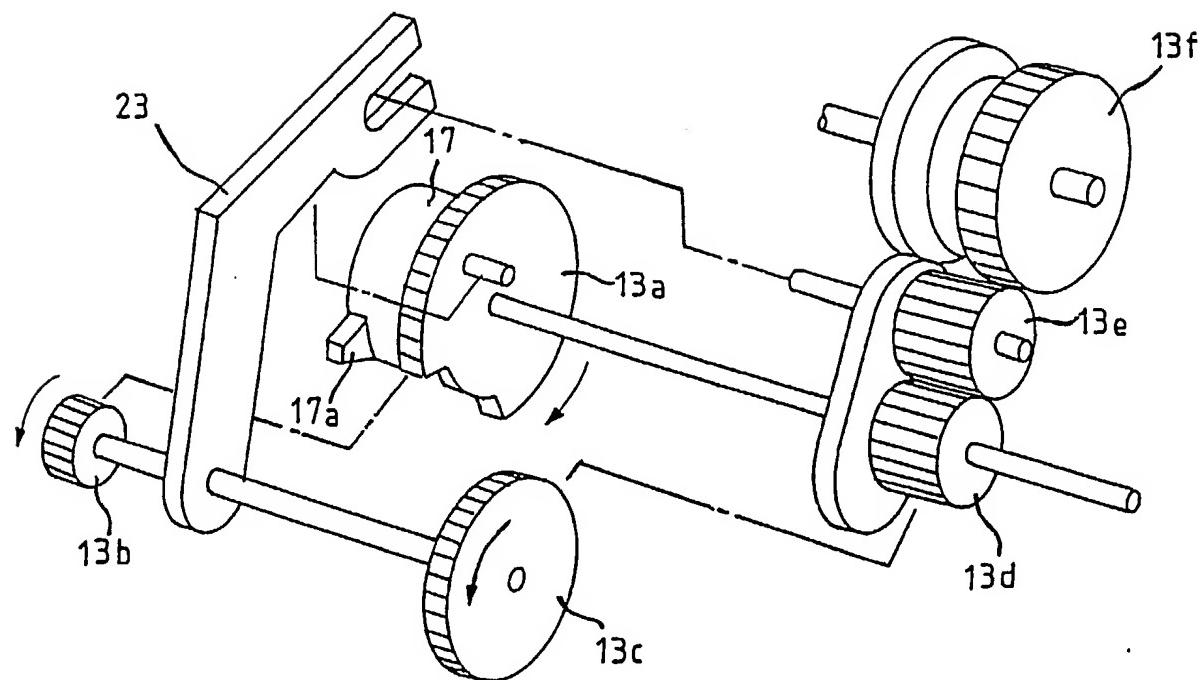


FIG. 4

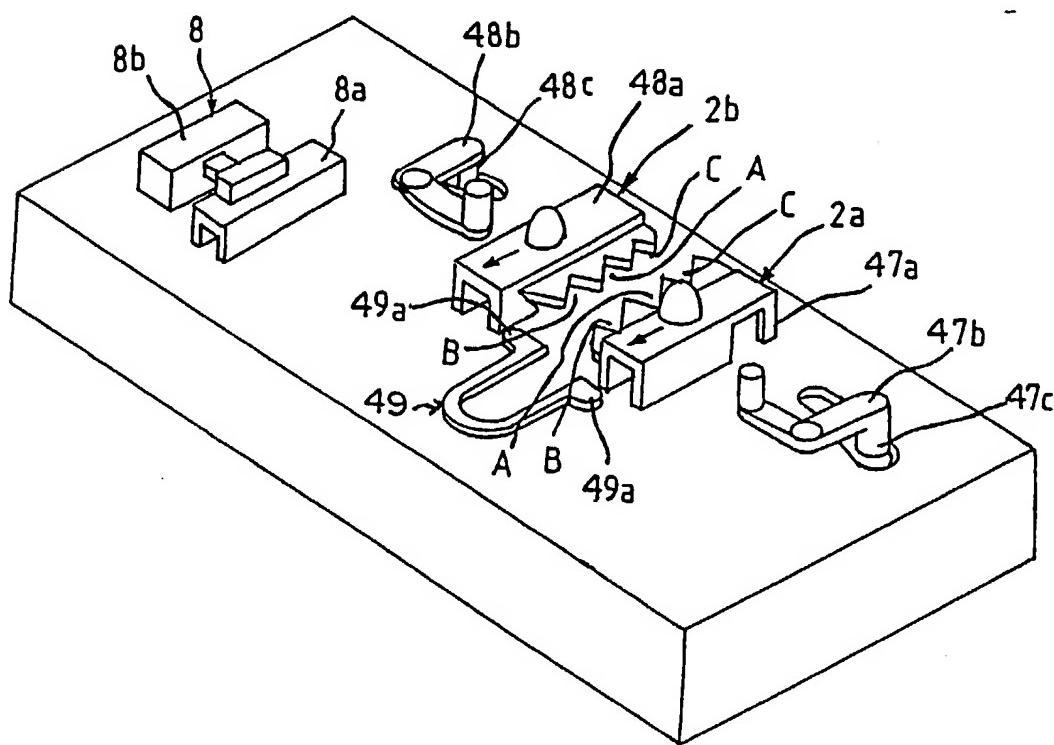


FIG. 5

27 +6 94

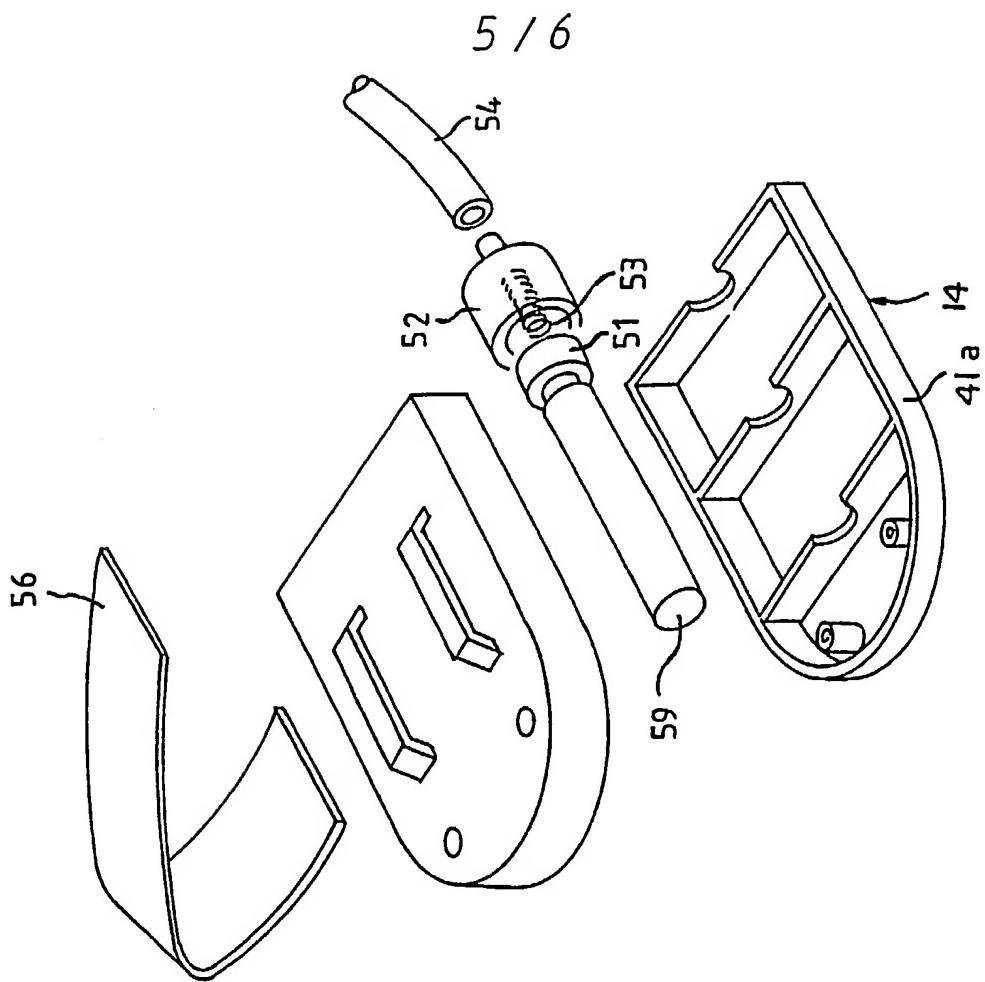
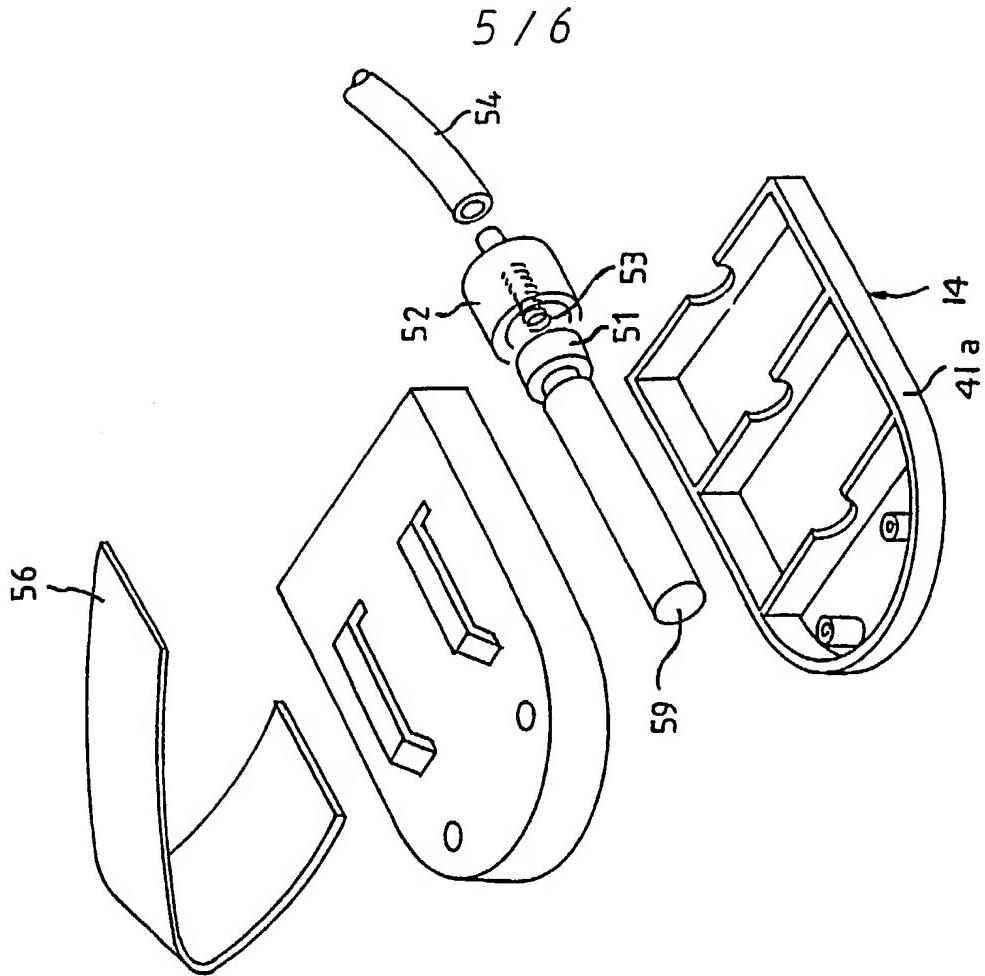


FIG. 7



37 46 94

616

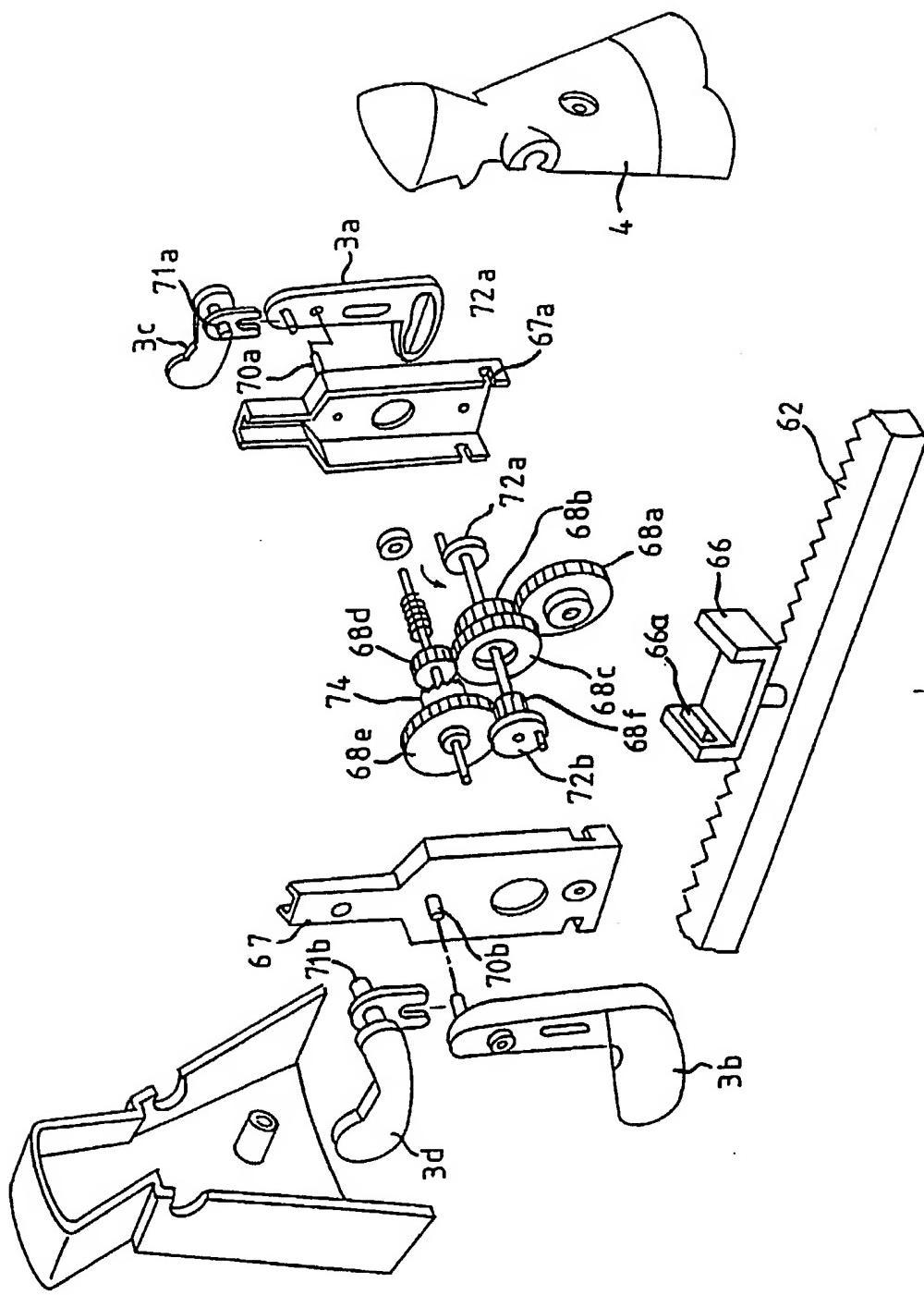


FIG. 8

-1-

DESCRIPTION  
RACE GAME

The present invention relates to a game device and more particularly to a game device in which the players may feel as if they are in a foot race.

Video game foot races are known but the runner is displayed on the television and the running is accomplished by pushing controller buttons with the fingertips to move the runners on the display and therefore the player cannot feel as if he is in the foot race.

It is an object of the present invention to solve the problem described above and to provide a game device with which the player can feel as if he is in the foot race. The game device comprises: a character which the player controls; a game board having a running track along which the character runs; a driving mechanism with a belt connector which engages the character for driving it around the track; and an air pump which can be attached to the player's body for operating the character by vibratory motion.

The driving mechanism and belt connector preferably include a machine element which has an on (permissible) position for allowing power transmission to the character and an off (shut-off) position, the element is normally in the shut off position. The machine is adapted to be operated by air pressure from the air pump from the shut off position to the on position. The game device preferably comprises: a character to which the player's motions can be input; a game board having a running track along which the character runs; a

driving mechanism with a belt connector which engages with the character for driving character; an air pump which can be attached to the player's body for operating the character by vibratory motion; and a motor for driving the driving mechanism connector, the motor being driven by a motor driving circuit in which a normally open switch is provided, the normally open switch being constituted to be opened and closed by air pressure from the pump.

In the above-described game, the air pump is installed, for example, on a leg, so that the character is moved by raising the thigh. The player therefore can enjoy the experience of jogging while playing a game and moreover getting a good work-out. Since a character with which the player may empathize is used, the player will be able to play the game while feeling as if he were a part of a race. Furthermore, a foot race game can be enjoyed by configuring the game such that, for example, two or more characters will be run separately by different players.

According to the present invention, the player can feel a part of the race while enjoying the game.

The game device will now be further described and explained by way of example with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view showing the outside appearance of a game device in the present invention.

Fig. 2 is a perspective view of a major portion of the driving mechanism with belt connector of the game device in the present embodiment.

Fig. 3 is a partly perspective view of the driving mechanism

with belt connector of the game device in the present embodiment.

Fig. 4 is a partly enlarged perspective view of the driving mechanism with belt connector of Fig. 3.

Fig. 5 is a plan view showing the state of the gears at the time of engagement of running mode of the game device in the present embodiment.

Fig. 6 is a perspective view of a switch mechanism of the game device in the present embodiment.

Fig. 7 is an exploded perspective view of an air pump of the game device in the present embodiment.

Fig. 8 is an exploded perspective view of a man-shaped character of the game device in the present embodiment.

An embodiment of the present invention will be hereinafter described with reference to the accompanying drawings.

Fig. 1 shows the outside appearance of a game device according to the present invention. The outline of a method of playing the game device 1 will be explained by referring to the drawing. First, the mode of movement of the characters 3 and 4 is designated by means of a running changeover mode switch 2a for an inner character and a running mode changeover switch 2b for an outer character. The game device is provided with three kinds of running modes: automatic high speed running mode, automatic low speed running mode, and manual running mode. Here, when the running mode changeover switches 2a and 2b are both in the automatic running mode position (automatic high speed running mode or automatic low speed running mode), the game is set to a demonstration mode.

The demonstration mode will first be explained. Two characters 3 and 4 are set up on a start line 6 in a running track 5 engaged in guide grooves 5a and 5b. Subsequently, a power switch 7 is turned to the on position thereby starting the characters 3 and 4 and reaching a finish line which also serves as the start line 6. In this case, when the running mode changeover switches 2a and 2b are set in the same running mode, (automatic high speed running mode or automatic low speed running mode) both the characters 3 and 4 are set so as to arrive at the finish line at the same time.

When one running mode changeover switch 2a is set in the automatic running mode and the other running mode changeover switch 2b is set in the manual mode. The air pump 14 on the manual mode side is attached to the player's leg and the power switch 7 is turned on. The first character 3 automatically begins to run. The second character 4 begins to run when the player's thigh is raised. Both characters race around the track to the finish line. Alternatively, when the running mode changeover switch 2a is set in the manual running mode position and the running mode changeover switch 2b is set in the automatic running mode position, character 4 runs automatically, while the character 3 is started by raising the player's thigh.

Furthermore, when both the running mode changeover switches 2a and 2b are set in the manual mode, two players may attach the air pump 14 on their legs and turn on the power switch 7. Then, the characters 3 and 4 start running when the players raise their

thighs. The player wins when his character reaches the finish line first.

Next, the game device 1 will be explained in detail. The game device 1, as shown in Fig. 1, consists of two characters 3 and 4, a game board 9 forming the running track 5 of the characters 3 and 4. A movement box 10 is attached on the game board 9. Air pumps 14 are connected to this movement box 10 and a battery box 11 is provided within the running track 5 or the game board 9.

In either of the movement box 10, or the game board 9 is provided a driving mechanism with a belt connector as shown in Figs. 2 and 3. In the driving mechanism, when the power switch 7 is on, gears 12d and 12e mounted on the same shaft 16 as the gear 12c are rotated by the driving power of the motor m through the gears 12a, 12b and 12c, as shown in Fig. 2. When the running mode changeover switches 2a and 2b are set to the automatic running mode position, the gears 12d and 12e are meshed with gears 13f and 14f. On the inner character 3 side, the motor power is transmitted to a worm gear 13k installed in the game board 9 to the gears 13f, 13g and 13j (in the automatic high speed mode) or gears 13f, 13h and 13j (in the automatic low speed mode), and further to gears 13l and 13m which in turn drive the track belt 61 disposed below the guide groove 5a thereby driving the character 3 around the track. On the outer character 4 side, the motor power is transmitted to a worm gear 14k located in the game board 9 through gears 14f, 14g and 14j (in the automatic high speed running mode) or gears 14f, 14h and 14i (in the automatic low speed running mode) and further to the

gears 141 and 14m which in turn drives a track belt 62 provided below the guide groove 5b thereby driving the character 4 around the track.

When the changeover switches 2a and 2b are in the manual mode, the gears 12d and 12e are not meshed with the gears 13f and 14f. In this case, the motor power is transmitted to the gears 13f and 14f and further to the characters 3 and 4 through a bypass mechanism of the gears 13a, 13b, 13c, 13d and 13e and by a bypass mechanism of the gears 14a, 14b, 14c, 14d and 14e.

The bypass mechanisms will now be explained. In the bypass mechanisms with the driving of the motor m, the gear 12b is rotated to work on sector gears 13a and 14a which are coaxially mounted on the shaft of the gear 12b by a resistance fit. However, under normal conditions, stop levers 19 and 20 which swing on the center of the shafts 19a and 20a are engaged by springs 21 and 22 with projections 17a and 18a provided on the peripheral surface of discs 17 and 18 which are formed integrally with the sector gears 13a and 14a. Therefore, the sector gears 13a and 14a do not rotate and accordingly in the automatic running mode the bypass mechanism remains stationary. In the manual running mode, the stop levers 19 and 20 are swung by air pressure from the air pump 14 coming off the projections 17a and 18a to thereby permit the rotation of the sector gears 13a and 14a. With the rotation of the sector gears 13a and 14a, the operating levers 23 and 24 are swung, closing the outer gears 13e and 14e to turn around the central gear 13d and 14d and at the same time come into mesh with the gears 13f and 14f (see

Fig. 4). Thus, the bypass mechanism is operated to transmit the driving power to the characters 3 and 4.

In the driving mechanism with belt connector are provided flywheels 25 and 26. These flywheels 25 and 26 are independently rotatably mounted on separate shafts and connected to gears 25b and 26b through gears 25a and 26a. These flywheels 25 and 26 function to drive the characters 3 and 4 smoothly by an inertial force.

Between the gears 131 and 141 and the gears 13m and 14m are provided friction clutches 27a and 27b which are held in contact with each other by springs 28a and 28b. These friction clutches 27a and 27b prevent damage to the driving mechanism when a child has forced the characters 3 and 4 to stop running.

The switch mechanism will now be explained. As shown in Fig. 5, the power switch 8 consists of an operating section 8a and a switch section 8b which is turned on and off by the use of the operating section 8a. The changeover switch 2a consists of an operating section 47a and a lever 47b which is swung by the operating section 47a. One arm of the lever 47b is in engagement with the operating section and the other arm is engaged by a pawl 47c in a groove 29a beside the gear 13f. The gears 13f, 13g, 13h and 25b are axially moved as one body by the operating section 47a. Concurrently, a pawl 49a of a U-shaped plastic stopper member 49 engages in a base of the tooth-like projections provided on the side of the operating section 47a, to be held in the separate mode positions. For the other character, the changeover switch 2b consists of an operating section 48a and a lever 48b which is

controlled by this operating section 48a. One arm of the lever 48b is engaged with the operating section and a pawl 48c of the other arm is engaged in a groove 29b provided beside the gear 14f. The gears 14f, 14g, 14h and 26b are axially moved as one body by the operating section 47a. In this case, the gears 14g and 14h move to the positions: (A) automatic high speed running mode, (B) low and high speed running mode, and (C) manual running mode (see Fig. 6). The gears 13g and 13h move to positions symmetrical to those of the gears 14g and 14h, therefore the positions of movement of the gears 13g and 13h will not be explained.

The air pump 14, as shown in Fig. 7, comprises: a piston 51 which is vertically movably disposed within a frame body 41a, a cylinder 52, a spring 53 is provided for urging the piston 51 upward and a push rod 59 is provided for pushing the piston 51 downward. The cylinder 52 is connected to an air cylinder 55 and the movement box 10 through a tube 54 (see Fig. 2). The stopper levers 19 and 20 are operated by a piston (not shown) in the air cylinder 55, thereby disengaging the stopper levers 19 and 20 from the pawls 17a and 18a. In Fig. 7, the reference numeral 56 refers to a belt, used to attach the pump to the player.

The construction of the joint between the track belts 61 and 62 and the characters 3 and 4, and the construction of the characters 3 and 4 will now be explained by referring to Figs. 3-8. On the track belts 61 and 62 are installed character receiving sections 65 and 66. The character receiving sections 65 and 66 are made in a U form and on the inside surfaces of the side walls are

provided tooth-like projections 65a and 66a. The character receiving sections 65 and 66 are exposed to the game board 9. The character 4 is supported by the character receiving member 66, making it possible to attach the character 4 to the track belt 62 by means of the character receiving section 66. The character receiving member 66 is formed such that it may be divided into two parts, front and rear. The character 4 is provided with a movement box 67 which may engage to tooth-like projection 66a through a hole 67a provided in the lower part of the movement box 67. From the underside of the movement box 67, a part of the gear 68a is exposed. This gear 68a is able to engage with a track 69b (Fig. 1) formed beside the guide groove 5b. With the rotation of the gear 68a accompanying the running of the character, the torque is transmitted to the feet 3a and 3b through the gears 68b, 68c, 68d, 68e and 68f and eccentric cams 72a and 72b thereby rocking the feet 3a and 3b on the center of the shafts 70a and 70b. At the same time, hands 3c and 3d are in engagement with the top end of the legs 3a and 3b and are rocked on the center of the shafts 71a and 71b. Between the gears 68d and 68e is interposed a friction clutch 74 which prevents damage to the gear mechanism when the character 4 is forced to stop during operation. The other character 3 is of the same construction except for its outside appearance and therefore will not be described. A track for operating the hands and feet of the character 3 is denoted by reference numeral 69a in Fig. 1.

While the running game apparatus according to the present invention has been described in connection with an embodiment thereof, the present invention is not limited to this particular embodiment. A variety of modifications are possible without departing from the scope thereof. For example, in the present embodiment, human characters 3 and 4 race; but animal models, robot models or car models may be used if they interest the players. In the present embodiment described above, the track belts 61 and 62 are used to run the human characters 3 and 4, but ropes may be used to run the characters 3 or 4. Furthermore, according to the present embodiment, stopper levers 19 and 20 are operated by air pressure from the air pump 14 to release the stopper levers 19 and 20 from the pawls 17a and 18a. But, a normally open switch may be installed in the motor driving circuit for driving the motor m so that the normally open switch will be opened and closed by the air pressure from the air pump. In this case, the mechanism of the game device will become much simplified.

CLAIMS

1. A running race game device comprising:
  - at least one trackway for guiding at least one character around a race course on each individual trackway;
  - a driving mechanism which propels the character around the track;
  - a belt connector for connecting the character to the driving mechanism;
  - an air pump which is attached to a players body which activates the driving mechanism in response to the players motion.
2. A running race game device as claimed in claim 1, further comprising two trackways each guiding a single character around the course
3. A running race game device as claimed in claim 1 or 2, further comprising:
  - two or more characters, each having different external appearance such that each player can recognize the character which he is propelling around the track by means of the pump attached to that players body.
4. A running race game device as claimed in any one of the preceding claims, further comprising:
  - a mechanical driving means for each character which in an automatic mode propels the character around the track without an input from a player.

5. A running race game device as claimed in claim 4, further comprising;  
a switch mechanism for changing the mode of the driving means  
from the automatic mode to the manual mode.
6. A running race game device as claimed in claim 5, wherein the switch  
mechanism is a three stage switch and the driving mechanism is  
responsive to said three stage switch to change the mode of the  
driving means from the manual mode to a high speed automatic mode  
or to a low speed automatic running mode
7. A running race game device as claimed in any one of claims 1 to 6, wherein the  
characters are human figures.
8. A running race game device as claimed in any one of claims 1 to 6, wherein the  
characters are race cars.
9. A running race game device as claimed in any one of claims 1 to 6, wherein the  
characters are animals.
10. A running race game device as claimed in any one of claims 1 to 6, wherein the  
characters are robots.

11. A running race game device as claimed in any one of the preceding claims, wherein the air pump which is attached to a players body further comprises an adjustable strap for attaching the air pump to the player's thigh.

12. A running race game device as claimed in any one of the preceding claims, wherein the air pump is connected to the driving mechanism by way of a flexible tube.

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**Relevant Technical Fields**

- (i) UK Cl (Ed.M) A6H (HLA, HLC, HLX); A6S  
 (ii) Int Cl (Ed.5) A63H 18/14

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASE: DIALOG

Search Examiner  
ALAN BLUNT

Date of completion of Search  
17 MAY 1994

Documents considered relevant  
following a search in respect of  
Claims :-  
1-12

**Categories of documents**

- |    |                                                                                                               |    |                                                                                                                         |
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X	GB 491563	(LEACH)		1
A	US 4401305	(SANO)		1

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